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Notice of Allowability

Application No.

10/591,352

Examiner

Thu-Huong Dinh

Applicant(s)

KOOPS ET AL.

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/06/2007.
2. ☒ The allowed claim(s) is/are 3-6.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 7/18/2007 8/31/06 TD
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Handwritten signature
MICHAEL J. BENTLEY
UNITED STATES PATENT AND TRADEMARK OFFICE

DETAILED ACTION

Election/Restrictions

1. This application is in condition for allowance except for the presence of claims 1-2 and 7-9 directed to device claims which are non-elected without traverse.
Accordingly, claims 1-2 and 7-9 have been cancelled.

Specification

2. The amended abstract filed on 8/21/2006 is entered.

Allowable Subject Matter

3. Claim 3 is allowed.
4. Dependent Claims 4-6 are allowed based on the allowance of the respective independent Claim 3 above.
5. The following is a statement of reasons for the indication of allowable subject matter: the prior art, either singly or in combination fail to anticipate or render obvious, the limitations of:

...(e) selectively etching the second silicon dioxide layer and then the silicon nitride layer above the thin field plates such that the thick trench sidewall insulating layer has a stack of the first silicon dioxide layer, the silicon nitride layer and the second silicon dioxide layer; with the limitation of Claim 3.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Park (U.S. 6,258,669 dated July 10, 2001) teaches Methods and Arrangements for Improved Formation of Control and Floating Gates in Non-Volatile

Memory Semiconductor Devices. Chang et al. (U.S. 2002/0137284 dated September 26, 2002) teach Tungsten Gate MOS Transistor and Memory Cells and Method of Making Same. Huang et al. (U.S. 6,027,969 dated February 22, 2000) teach Capacitor Structure For a Dynamic Random Access Memory Cell. Baliga (U.S. 5,998,833 dated December 7, 1999) teach Power Semiconductor Devices Having Improved High Frequency Switching And Breakdown Characteristics. Haselden et al. (U.S. 6,566,196 dated May 20, 2003) teach Sidewall Protection In Fabrication Of Integrated Circuits. Kianian et al. (U.S. 6,940,125 dated September 6, 2005) teach Vertical NROM and Methods for Making Thereof. Tu (U.S. 6,872,622 dated March 29, 2005) teach Method of Forming A Capacitor Top Plate Structure to Increase Capacitance and to Improve Top Plate To Bit Line Overlay Margin. Williams et al. (U.S. 6,750,507 dated June 15, 2004) teach Super-Self-Aligned Trench-Gated DMOS With Reduced On-Resistance. Hirler et al. (U.S. 6,528,355 dated March 4, 2003) teach Method for Fabricating A Trench MOS Power Transistor. Hebert et al. (U.S. 5,567,634 dated October 22, 1996) teach Method of Fabricating Self-Aligned Contact Trench DMOS Transistors. Nam et al. (U.S. 6,211,018 dated April 3, 2001) teach Method For Fabricating High Density Trench Gate Type Power Device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu-Huong Dinh whose telephone number is 571 272-9014. The examiner can normally be reached on Monday through Friday (8:30AM-5:00PM Eastern).

Application/Control Number:
10/591,352
Art Unit: 2812

Page 4

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thd
1/16/2008